

Work Order ID 57919

April 20, 2010 10:03:57 AM



ENGINEERING
APPROVAL

REINSPECT PER

D4010 Page 1
REV. D

Item ID: D4010-041

Accept



Setup Start



10.06.03

Revision ID:

Item Name: Bearpaw Assembly

Stop



Start Date: 20/04/2010 Start Qty: 8.00



Cust Item ID:

Required Date: 29/04/2010 Req'd Qty: 8.00



Customer:

Reference:

Approvals:

Process Plan:

PL

Date: 10-4-20 Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D4010-041

C

100

0.00



HandThermo

Memo

0.00

Hand Finishing Thermoforming

Pick Kit

DL
10/03/13

110

0.00



HandThermo

Memo

0.00

Hand Finishing Thermoforming

1- Use wearbar to transfer drill hole and open to finish size as per dwg
2-- Deburr
3- Assemble as per Dwg D4010
4-Install wearplates as per dwg.

DL
10/03/13

120

QC2- Inspect parts off machine FAI/FAIB

0.00



QC

Memo

0.00

Quality Control

DL 10/03/13

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 57919

April 20, 2010 10:03:57 AM



Page 2

Item ID:	D4010-041	Accept		Setup	Start	
Revision ID:						
Item Name:	Bearpaw Assembly			Stop		
Start Date:	20/04/2010	Start Qty:	8.00			
Required Date:	29/04/2010	Req'd Qty:	8.00			
Reference:						

Approvals:	Process Plan:	Date:	Tooling:	Date:	Run	Start	
	QC:	Date:	SPC (Y/N):	Date:		Stop	

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130 QC Quality Control	QC5- Inspect part completeness to step on W/O was inspect to the D day. Memo 8.06.04 (x8)	0.00 0.00							
140 Packaging Packaging	Identify as per dwg & Stock Location: PPP Memo 57896	0.00 0.00							
150 QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.00							

ENGINEERING
APPROVAL

RE-INSPECT
PER D4010.20V-D

10/06/08

10/06/08

10-6-08

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

April 20, 2010 10:04:02 AM

Page 1

Work Order ID: 57919

Parent Item: D4010-041

Parent Item Name: Bearpaw Assembly



Comments: IPP RevB: 09/11/03 Drawing changed to accomidate OEM and Dart Skidtube.
DL. Verified by:DD IPP Rev. C Dwg.
Redesign 09/11012 DL VERIFIED BY:DD

Start Date: 20/04/2010



Required Date: 29/04/2010

Start Qty: 8.00

Required Qty: 8.00

Component Item ID/ AN3C5A	Replacement	Mfg/ Purchased	Bin	Primary	Last	Route	Unit of	Qty on	Remaining	Qty	Date	Status
			No			100	Each	883.0000	40.0000			
Bolt												

Warehouse	Loc Qty	Loc Code
<u>Location</u>		
Main Warehouse		
ST350	500	
114330	500	
Main Warehouse		
ST351	383	
113121	53	
114056	179	
114108	51	
114181	100	

D3456-1	Manufactured	No				100	Each	136.0000	24.0000			
												
Washer												

Warehouse	Loc Qty	Loc Code
<u>Location</u>		
Main Warehouse		
ST058	136	
54692	136	

40 OK 10/05/13

24 OK 10/05/13

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

April 20, 2010 10:04:02 AM

Page 2

Work Order ID: 57919



Parent Item: D4010-041



Parent Item Name: Bearpaw Assembly

Start Date: 20/04/2010

Required Date: 29/04/2010

Comments: IPP RevB: 09/11/03 Drawing changed to accomodate OEM and Dart Skidtube.
DL. Verified by:DD IPP Rev. C Dwg.
Redesign 09/11012 DL VERIFIED BY:DD

Start Qty: 8.00

Required Qty: 8.00

Component Item ID/	Replacement	Mfg/	Bin	Primary	Last	Route	Unit of	Qty on	Remaining	Qty	Date	Status
D4010-1		Manufactured	No			100	Each	2.0000	8.0000			
Bearpaw												

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

B 58337

8

Wh. 10/05/13

QUAR

2

53879

2

D4013-041

Manufactured

No

100

Each

26.0000

8.0000



Wearplate Assembly

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST256

26

53880

16

54444

10

8

Wh. 10/05/13

April 20, 2010 10:04:02 AM

Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

April 20, 2010 10:04:02 AM

Page 3

Work Order ID: 57919

Parent Item: D4010-041

Parent Item Name: Bearpaw Assembly

Comments: IPP RevB: 09/11/03 Drawing changed to accomidate OEM and Dart Skidtube.
DL. Verified by:DD IPP Rev. C Dwg.
Redesign 09/11012 DL VERIFIED BY:DD

Start Date: 20/04/2010

Required Date: 29/04/2010

Start Qty: 8.00

Required Qty: 8.00

Component Item ID/	Replacement	Mfg/	Bin	Primary	Last	Route	Unit of	Qty on	Remaining	Qty	Date	Status
D4015-041		Manufactured	No			100	Each	96.0000	40.0000			
Wearbar Weldment												

Warehouse	Loc Qty	Loc Code
Location		
Main Warehouse		
ST109	96	
53818	45	
53956	51	
Main Warehouse		
therm	45	

40 OK 10/05/13

MS21043-3	Purchased	No				100	Each	3,875.000	40.0000			
Nut												

Warehouse	Loc Qty	Loc Code
Location		
OFFSHORE		
FG	80	
103691	80	
Main Warehouse		
ST301	3795	
112314	3795	

40 OK 10/05/13

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

April 20, 2010 10:04:02 AM

Page 4

Work Order ID: 57919



Parent Item: D4010-041



Parent Item Name: Bearpaw Assembly

Start Date: 20/04/2010

Required Date: 29/04/2010

Comments: IPP RevB: 09/11/03 Drawing changed to accomidate OEM and Dart Skidtube.
DL. Verified by:DD IPP Rev. C Dwg.
Redesign 09/11012 DL VERIFIED BY:DD

Start Qty: 8.00

Required Qty: 8.00

Component Item ID/	Replacement	Mfg/	Bin	Primary	Last	Route	Unit of	Qty on	Remaining	Qty	Date	Status
MS21043-4		Purchased	No			100	Each	1,150.000	24.0000			
Nut												

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
OFFSHORE		
FG	40	
104603	40	
Main Warehouse		
ST301	1110	
112492	60	
113064	110	
113069	40	
114181	400	
114348	500	

24 OK 10/05/13

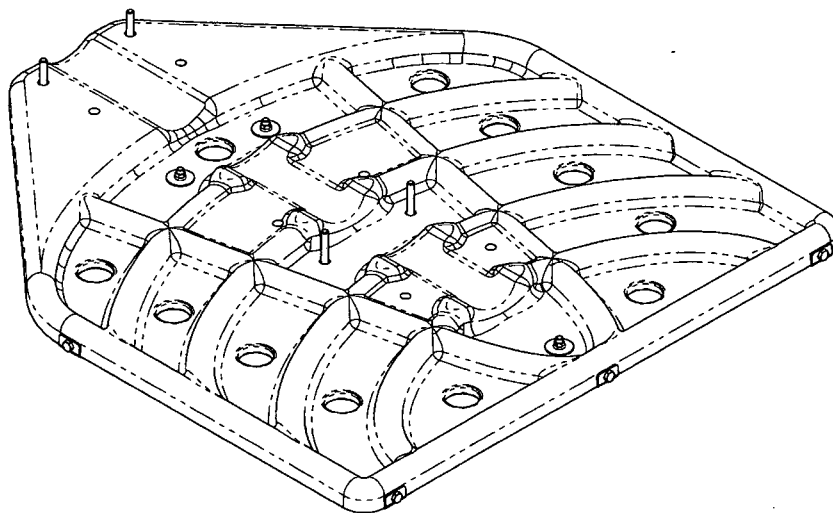
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



D4010-041 BEARPAW ASSEMBLY (407)

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 57919

BJ10-4-20

RELEASED
2009-11-21
MP

REV.	DESCRIPTION	BY	DATE
C	OPTIMIZED DESIGN BASED ON FUNCTIONALITY AND TO EASE MANUFACTURING	MB	09.11.10
B	REDESIGNED; ADDED PROVISIONS FOR COMPATIBILITY WITH OEM SKIDTUBES/SADDLES; REDEFINED SOME TOLERANCE	MB	09.11.02
A	NEW ISSUE	MB	09.10.22
DESIGN	<i>MB</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D4010 REV. C TITLE BEARPAW (407) SCALE NTS DATE 09.11.10	
DRAWN	<i>MB</i>		
CHECKED	<i>AS</i>		
MFG. APPR.	<i>MB</i>		
APPROVED	<i>MB</i>		
DE APPR.	<i>MB</i>	<small> COPYRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD. </small>	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

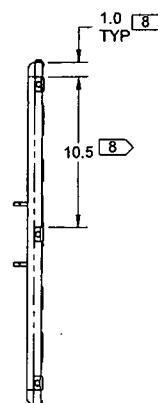
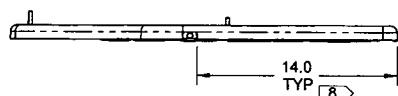
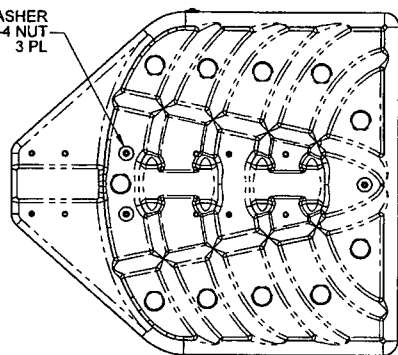
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

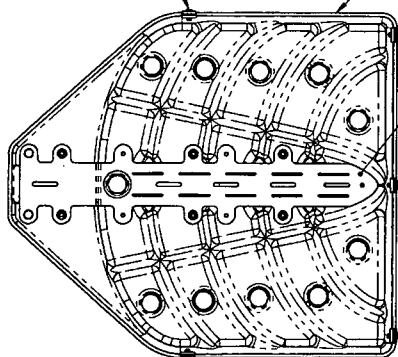
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

D3456-1 WASHER
MS21043-4 NUT
3 PL



AN3C5A BOLT
D4015-041 WEARBAR
MS21043-3 NUT



AN3C5A BOLT
D4015-041 WEARBAR
MS21043-3 NUT

D4010-1
BEARPAW

AN3C5A BOLT
D4015-041 WEARBAR
MS21043-3 NUT

D4013-041 WEARPLATE
ASSEMBLY

AN3C5A BOLT
D4015-041 WEARBAR
MS21043-3 NUT

AN3C5A BOLT
D4015-041 WEARBAR
MS21043-3 NUT

D4010-041 BEARPAW ASSEMBLY (407)

ITEM	QTY -041	P/N	DESCRIPTION
1	X	D4010-041	BEARPAW ASSEMBLY (407)
3	3	D3456-1	WASHER
4	1	D4010-1	BEARPAW
5	1	D4013-041	WEARPLATE ASSEMBLY
6	5	D4015-041	WEARBAR
21	5	AN3C5A	BOLT
22	5	MS21043-3	NUT
23	3	MS21043-4	NUT

WLO 57919

RELEASED
2009-11-24

D4010-041 NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 9.41 lbs
- 8) LOCATE D4015-041 (ITEM 5) AS SHOWN AND TRANSFER DRILL $\phi 0.191$ " HOLE FROM D4015-041 TO D4010-1 BEARPAW AND FASTEN USING PRESCRIBED HARDWARE.
- 9) TORQUE: AN3 NUTS = 15-20 in-lb
AN4 NUTS = 50-70 in-lb

DESIGN	1	DART AEROSPACE LTD	
DRAWN	1	HAWKESBURY, ONTARIO, CANADA	
CHECKED	1	DRAWING NO. D4010	REV. C
MFG. APPR.	1	TITLE BEARPAW (407)	SHEET 2 OF 3
APPROVED	1	SCALE	
DE APPR.	1	NTS	
DATE	09.11.10	<small>COPYRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

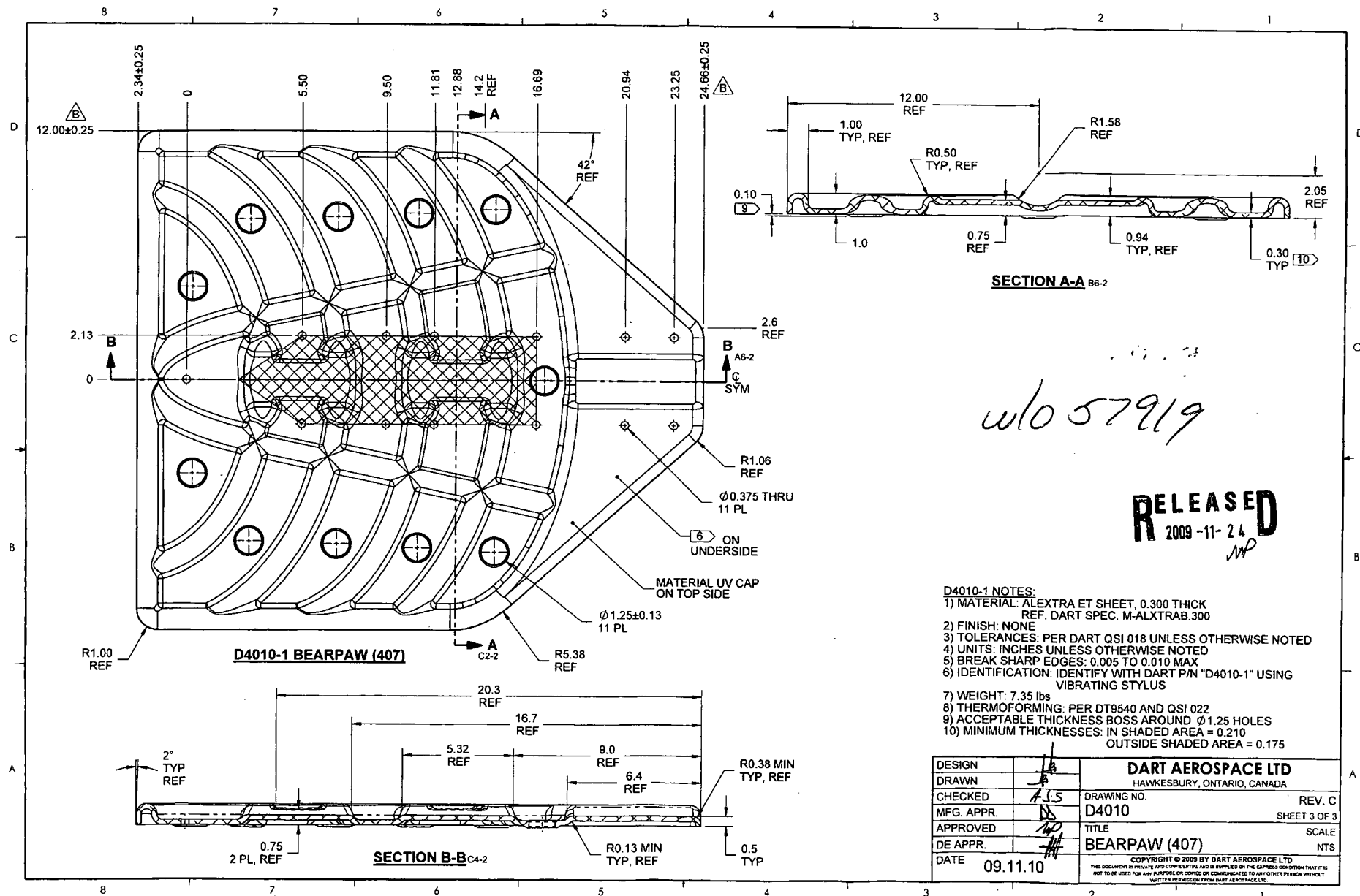
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

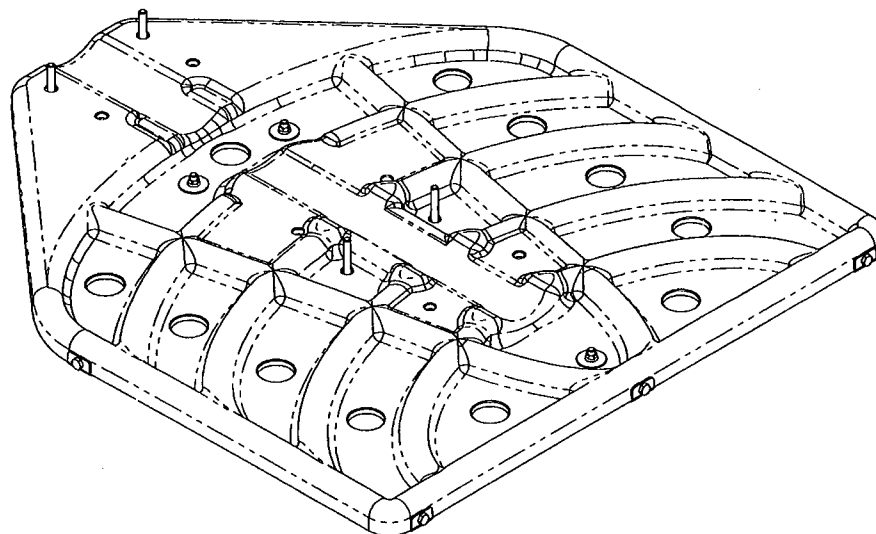
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

REFERENCE ONLY



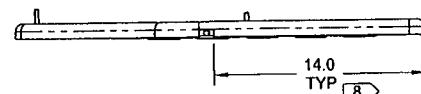
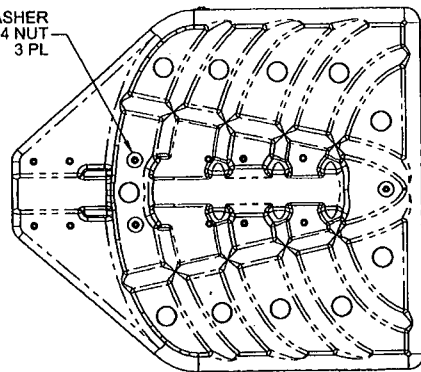
D4010-041 BEARPAW ASSEMBLY (407)

RELEASED
2010-05-26
MD

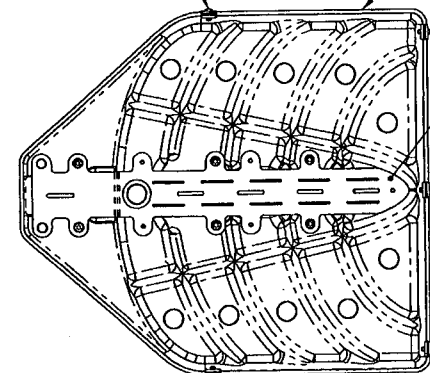
D	CHANGED NOTE 9 ON SHEET 3 (ZN A3-3); CHANGED Ø0.375 HOLE LOCATIONS FROM HARD CALL OUT TO REF (ZN'S D5-3, D6-3, D7-3); ADDED CHAMFERS TO ALL DRILLED HOLES (ZN B4-3, 2 PL), REMOVED BOSSES ON BOTTOM SURFACE AROUND Ø1.250 HOLES (ZN D4-3 ON PREVIOUS REV'S); PICTORIAL CHANGE ON D4010-1 TO REFLECT MOLD REWORK (RECESSES FOR CLEARANCE OF BOTTOM SADDLE EDGE AND RIVET HEADS ON OEM SKIDTUBES). REASON: SEE PAR#10-020.	MB	10.05.14
C	OPTIMIZED DESIGN BASED ON FUNCTIONALITY AND TO EASE MANUFACTURING	MB	09.11.10
B	REDESIGNED; ADDED PROVISIONS FOR COMPATIBILITY WITH OEM SKIDTUBES/SADDLES; REDEFINED SOME TOLERANCE	MB	09.11.02
A	NEW ISSUE	MB	09.10.22
REV.	DESCRIPTION	BY	DATE
DESIGN	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D4010 TITLE BEARPAW (407) DATE 10.05.14		
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE 10.05.14		<small> COPYRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD </small>	

REFERENCE ONLY

D3456-1 WASHER
MS21043-4 NUT
3 PL



8 AN3C5A BOLT
D4015-041 WEARBAR
MS21043-3 NUT



8 AN3C5A BOLT
D4015-041 WEARBAR
MS21043-3 NUT

D4010-1
BEARPAW

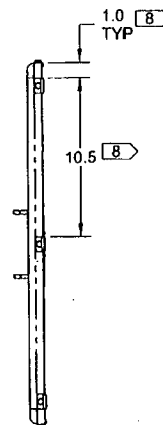
AN3C5A BOLT 8
D4015-041 WEARBAR
MS21043-3 NUT

D4013-041 WEARPLATE
ASSEMBLY

AN3C5A BOLT 8
D4015-041 WEARBAR
MS21043-3 NUT

AN3C5A BOLT 8
D4015-041 WEARBAR
MS21043-3 NUT

D4010-041 BEARPAW ASSEMBLY (407)



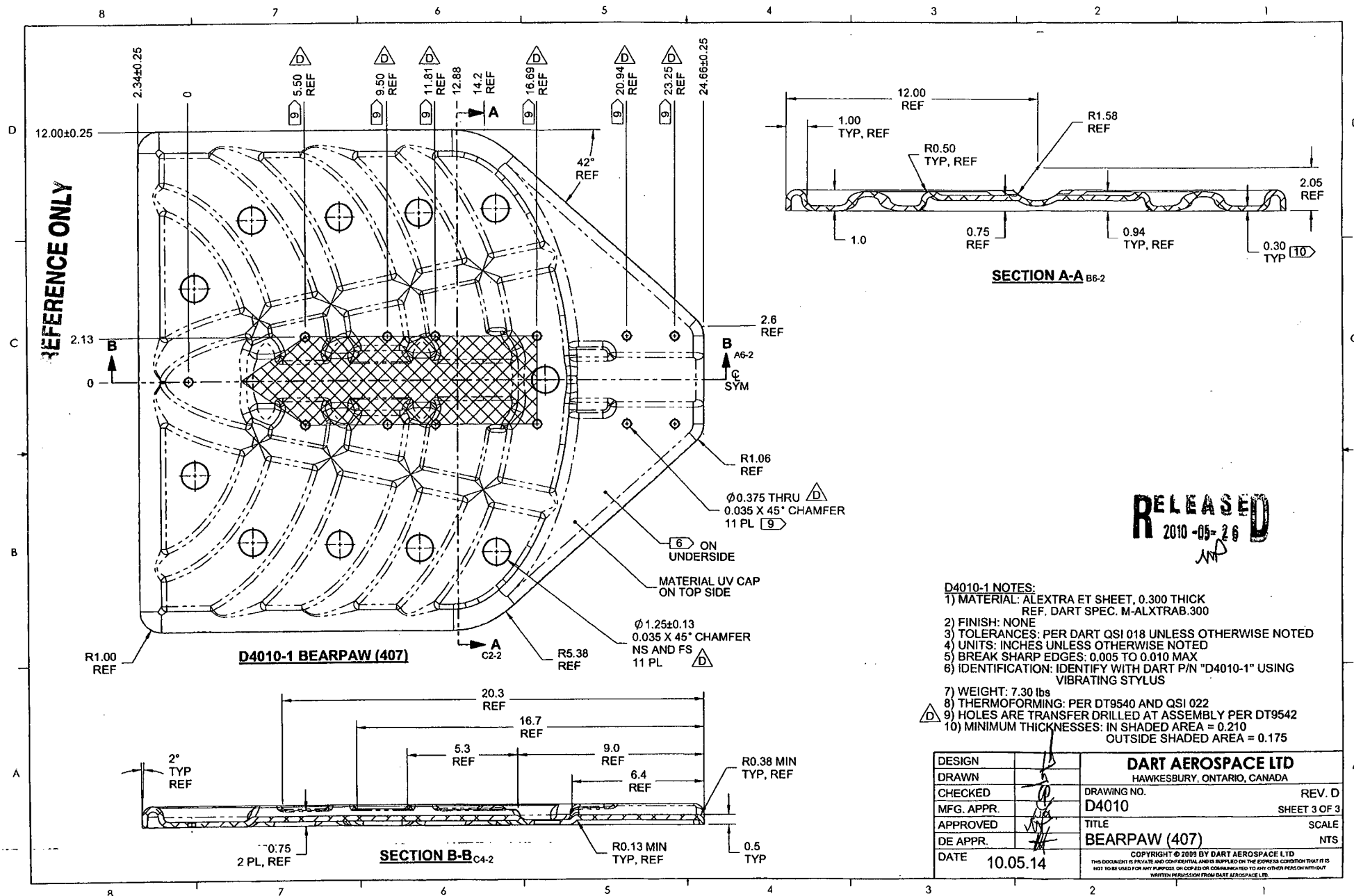
ITEM	QTY -041	P/N	DESCRIPTION
1	X	D4010-041	BEARPAW ASSEMBLY (407)
2	3	D3456-1	WASHER
3	1	D4010-1	BEARPAW
4	1	D4013-041	WEARPLATE ASSEMBLY
5	5	D4015-041	WEARBAR
6	5	AN3C5A	BOLT
7	5	MS21043-3	NUT
8	3	MS21043-4	NUT

RELEASED
2010-05-28

D4010-041 NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 9.37 lbs
- 8) LOCATE D4015-041 (ITEM 5) AS SHOWN AND TRANSFER DRILL $\varnothing 0.191$ HOLE FROM D4015-041 TO D4010-1 BEARPAW AND FASTEN USING PRESCRIBED HARDWARE.
- 9) TORQUE: AN3 NUTS = 15-20 in-lb
AN4 NUTS = 50-70 in-lb

DESIGN		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN		DRAWING NO.	REV. D
CHECKED		D4010	SHEET 2 OF 3
MFG. APPR.		TITLE	SCALE
APPROVED		BEARPAW (407)	NTS
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DATE	10.05.14		



L Lacelle

From: Marc Bellavance [mbellavance@dartaero.com]

Sent: June 3, 2010 8:26 AM

To: 'L Lacelle'; 'Mike Petsche'

Subject: RE: 407 beapaws

REFERENCE ONLY

Well, drawing D4010 Rev. D was revised and released on May 26 to include all the changes discussed during our investigation and based on Exova's report.

So really, no Eng sign offs are required. In my opinion, QC can inspect per D4010 Rev. C.

Marc Bellavance

Mechanical Designer/Technical Support

DART aerospace Ltd.

Tel: 613-632-5200 Ext. 240

Fax: 613-632-9311

E-mail: mbellavance@dartaero.com

Web: www.dartaero.com



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From: L Lacelle [mailto:llacelle@dartaero.com]

Sent: June 3, 2010 7:27 AM

To: 'Mike Petsche'; 'Marc Bellavance'

Subject: 407 beapaws

We have had some 407 bearpawa D4010-041's made by Daryl some time ago that are still sitting near the pkgng area waiting for engineering sign off...who can take care of this for me?

Thank You,
Linda Lacelle
Production Manager
Dart Aerospace Ltd

6/03/10